MARCH 18, 1950
Vol. 112 No. 6

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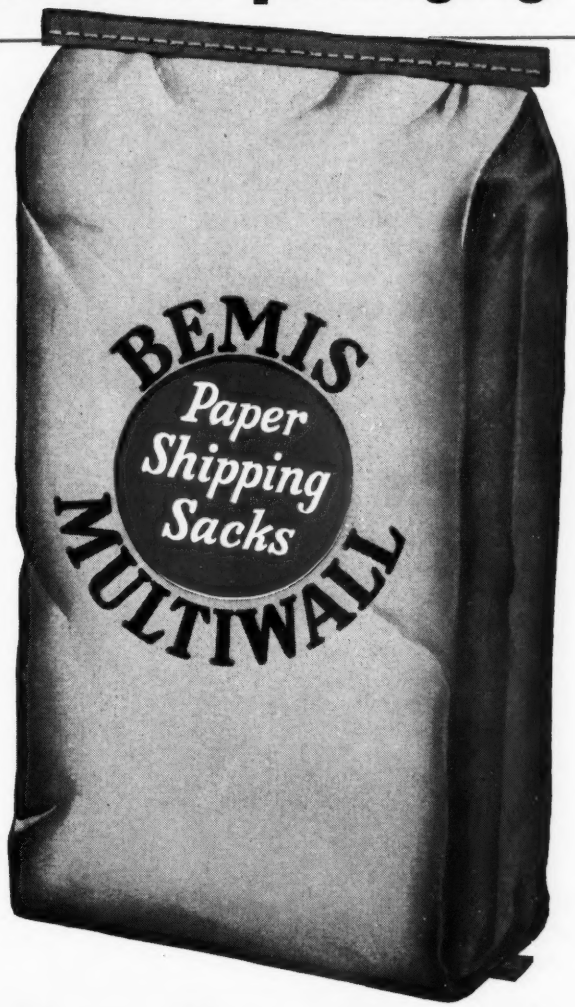
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The American FERTILIZER

Vol. 112 MARCH 18, 1950 No. 6

New England Fertilizer Conference

Fertilizer Men and Agronomists Meet at Connecticut Experiment Station in Joint Session with the National Fertilizer Association to Celebrate Station's 75th Birthday and the Centennial of the Fertilizer Industry

Representatives of the fertilizer industry from the six New England states met February 27–28 at New Haven to jointly celebrate the 75th anniversary of the Connecticut Experimental station and the 100th anniversary of the founding of the American fertilizer industry. The meetings were held in cooperation with the National Fertilizer Association.

Dr. J. G. Horsfall, director of the Experiment Station, opened the meeting on a strong note when he said, "To push back the frontiers of knowledge...should be the first purpose of an agricultural experiment stati n."

Applying new knowledge to the problems of agriculture is also an essential function of an experiment station, Dr. Horsfall went on. If basic research in the field of animal and plant science increases knowledge, the farmer will automatically benefit, he said. The discovery, he stressed, is the important thing; application develops from this.

"Minor Elements in Modern Fertilizers" was the subject of a speech by Dr. Vincent Sauchelli, Director of Research for the Davison Chemical Corporation, Baltimore, Md.

The importance of major fertilizer elements, such as nitrogen, potassium and potash, has long been recognized, but only recently have the minor or trace elements, like boron, come into the fertilizer picture, he said. Among the reasons for this are the increasing substitution of machinery for farm animals resulting in a lack of manure, which supplied many minor elements; the development of diagnostic tests which made it possible to tell when elements were lacking, and lime applications which suppress some minor elements.

In incorporating the minor elements into fertilizer formulas, the industry is proceeding with caution, Dr. Sauchelli said. In his opinion, this is a wise decision. He advocated continuing research on local requirements for minor elements to guide the manufacturer. Another field that needs study, he said, is the reaction of these soluble salts when they are added to the fertilizer mixture. Until these questions are answered, he pointed out, the industry will continue to supply minor elements on a "prescription basis" in the areas where it has been determined they are definitely needed.

The contributions of the fertilizer industry to the peoples of the world was stressed in the talk by Dr. Firman E. Bear, and Dr. T. E. Odland discussed symptoms of under-supply and over-supply in food elements. Both talks held the attention of the large group gathered for this occasion at the Connecticut station.

Dr. Bear, head, department of soils, New Jersey Agricultural Experiment Station, emphasized the value of fertilizer, stating that "the fertilizer industry has made the most important contribution in growing food for man. Without fertilizer the food needs of the people of the world could not be met."

Good soil management requires the use of inorganic fertilizer to produce larger plants. This adds organic matter to the soil and keeps it in good physical condition, he said. The fertilizers we are using have been deposited in their present locations by geologic action. We are simply moving them back to the soil from which they were leached centuries ago. He concluded, "In making this transfer, the fertilizer industry stands between man and any possible shortge of food for years to come."

Dr. Odland, head of the department of agronomy at the Rhode Island Experiment Station, outlined the functions of major and secondary plant food elements. Plants like animals and human beings, require certain elements, he said, to live, grow and be healthy. Even if plants are able to grow on deficient soil, humans and animals eating the resultant food crop suffer from nutritive deficiencies. Dr. Odland listed the functions several plant elements fulfil in plant nutri-

tion and described the symptoms from over-or under-supply.

Mr. Ralph Donaldson, agronomist, Massachusetts Agricultural Experiment Station, described the Green Pastures contest for 1950 and showed a sound film on the program made last summer.

Coleman Addresses Annual Banquet

The first day's meeting concluded with a banquet at the Hotel Taft, in New Haven, at which Dr. Russell Coleman, president of the National Fertilizer Association, was the principal speaker.

In his comments to the group, Dr. Coleman said, "The American fertilizer industry, 100 years old in 1950, has contributed to the stability of the United States by replacing the plant foods taken out of the soil by harvested crops. Other civilizations, he said, have fallen because the soil has been depleted and plant nutrients not returned to it."

One hundred representatives of the fertilizer industry in the six New England states heard Dr. Coleman's address.

"In its 100 years of existence, the fertilizer industry has made many contributions to the nation's economy," the association president went on. "Today, the United States produces more food than we can ourselves use, making it possible to share with other countries which are unable to produce enough to meet their food needs. One contributing factor to this has been the use of fertilizers," he said.

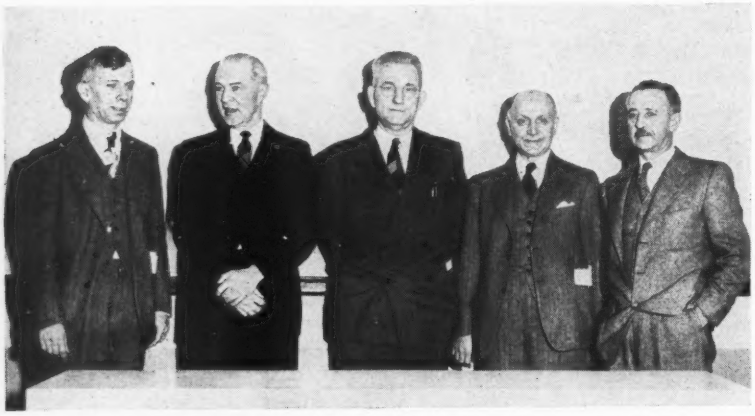
"Today, the American farmer is able to produce more economically than in the days before fertilizers came into common use, thus moving labor forces from the farm to industry," Dr. Coleman stated. "The solution to the present-day problems of parity prices and surplus commondities," he went on, "is even more efficient production, more profit per acre. The fertilizer industry can play an ever-increasing part in bringing this about and in contributing to the nation's total economy. This is one of the challenges the industry faces today, "he said, pointing out that," Only one-third of the plant food being taken from the soil is now being replaced."

Dr. Coleman traced the history of the fertilizer industry, which marks its real begining in 1850 when the first commercial fertilizer mixture was manufactured in Baltimore. Early milestones he mentioned were the first shipment of a fertilizer material into the United States in 1834, the discovery that potassium had value as a plant food in 1855, the first state fertilizer control law in 1856, and the establishment of the first agricultural experiment station in 1875.

Those attending the banquet also heard a tribute to the late Dr. M.F. Morgan, former head of the Connecticut Station Soils Department. Dr. Morgan was killed in action on Leyte in January, 1945, while serving as a lieutenant colonel in the U. S. Army. The tribute was made by William L. Slate, Director Emeritus of the Connecticut Station, who reviewed Dr. Morgan's outstanding record both as a soils scientist and as an army officer in World Wars I and II.

B. B. Fall, of the Rogers and Hubbard Company, Portland, Conn., a director of the National Fertilizer Association, presided at the ban-

(*Continued on page 23*)



Some of the speakers at the New England Fertilizer Conference. Left to right: Dr. James G. Horsfall, Director, Connecticut Agricultural Experiment Station; Dr. Firman E. Bear, Head, Soils Department, New Jersey Agricultural Experiment Station; Dr. T. E. Odland, Head, Agronomy Department, Rhode Island, Agricultural Experiment Station; Dr. Vincent Sauchelli, Director of Research, Davison Chemical Corporation, Baltimore, Md.; Ralph W. Donaldson; extension agronomist, University of Massachusetts.



Fertilizer Men and Agronomists at New England Conference. Left to right: E. S. Russell, Old Deerfield Fertilizer Co., Director, N. F. A.; F. S. Lodge, Assistant to the President, N. F. A.; W. E. Meeken, Consolidated Rendering Co., Director, N. F. A.; R. E. Fraser, Summers Fertilizer Co., Director, N. F. A.; Dr. James G. Horsfall, Director of Connecticut Agricultural Experiment Station; B. B. Fall, The Rogers & Hubbard Co., Director, N. F. A.; Dr. Russell Coleman, President, N. F. A.; Dr. C. L. W. Swanson, Head, Soils Department, Connecticut Agricultural Experiment Station.

KEEPING AHEAD OF PLANT DISEASES

Task of the Plant Disease Survey and the Forcasting Project

By Paul R. Miller

Senior Plant Pathologist, Bureau of Plant Disease Survey, U.S.D.A., Beltsville, Md.

(Continued from the issue of March 4, 1950)

The Plant Disease Survey

"The Plant Disease Survey was organized as an office of the Bureau of Plant Industry, United States Department of Agriculture, on July 1, 1917 . . . The principal objects of the Survey broadly stated are: first, to collect information on plant diseases in the United States covering such topics as prevalence, geographical distribution, severity, etc., and second, to make this information immediately available to all persons interested, especially to those concerned with disease control." This brief statement, quoted from the first number of the *Plant Disease Reporter* (or *Plant Disease Bulletin* as it was called for the first few years, in Vol. 1, No. 1, Aug. 15, 1917), is still an accurate summary of the Survey's functions.

The Survey has always operated in practically the same manner as it does now. Sources and means of distributing information are shown by solid lines on the chart (Figure 1). The collaborators, who are State plant pathologists appointed in each State to cooperate with the Survey, form the mainstay of the reporting service. Except for brief periods and for special purposes when a small paid field staff of its own was authorized, the Survey has always depended on voluntary reports.

So when we say the "Plant Disease Survey" we mean not only the small Washington staff, but all the collaborators who are an essential part of its organization. The Survey's usefulness depends to a large extent on the quantity and quality of the cooperation it receives from its collaborators. Both its strength and its weaknesses are derived from the voluntary nature of its organization—weakness because of all the duties that have priority of both interest and time over the performance of a voluntary task, strength because of the widespread bond of participation and responsibility, manifested in conscientious reporting of any really significant plant disease event, in support of Survey projects, in thoughtful critical comment on Survey activity or suggestions as to policy. The Survey gratefully acknowledges its indebtedness to its collaborators. Another type of organization might have proven more efficient in a narrow sense, but it is doubtful whether any other could have achieved the fundamental understanding of the Survey's broader objectives that is now beginning to pay dividends both to the Survey and to pathology in general.

Reports received by the Survey are classified and filed in a permanent index, constituting a valuable historical record of plant disease occurrence in the Unlted States. Plant disease literature from all over the world is indexed in a separate file. Both indexes are available to any one wishing to consult them.

The Plant Disease Reporter, now in its thirty-third volume, is one of the Survey's chief services to plant pathologists. It is a processed publication now issued monthly. Since it was first founded the nature of its contents has varied according to plant pathological needs and interests, from mostly brief current reports at first, to the present technical notes and articles, summaries, and comment on plant disease ecology, geography, control, and importance. Part of its outstanding usefulness is due to the speed of publication. No article judged suitable waits longer than six weeks before it appears. Thus the *Reporter* serves as a sort of forum for timely discussion of present and future pathological problems.

The *Reporter's* timeliness and wide-range usefulness are evidenced by the compilations of tests of new fungicides, published yearly since the extraordinary development of new chemical compounds made this one of the outstanding interests of plant pathologists. Their publications as *Supplements* to the *Reporter* makes them available while

(Continued on page 22)

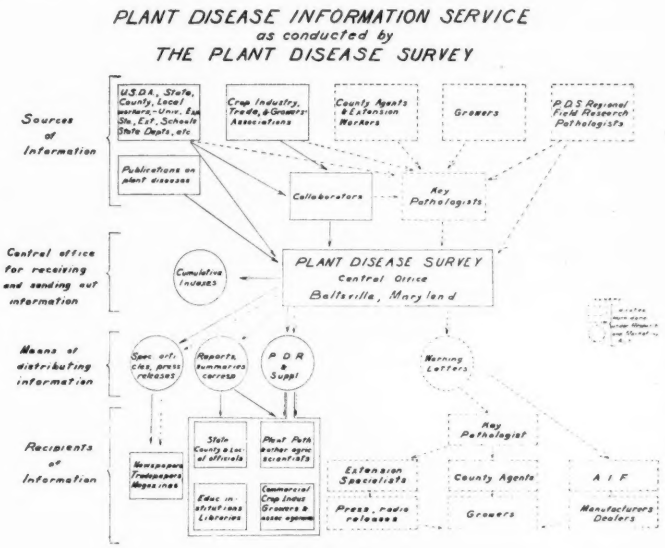


Figure 1.

NITROGEN USE IN THE MIDWEST STILL GROWS

By J. Richard Adams and Joe C. Sharp

Spencer Chemical Company, Kansas City, Missouri

THE fertilizer industry has moved West and with very gratifying results for the farmer as well as the industry.

The figures in Table I show the tremendous increase that has taken place in the use of fertilizers in the Midwest. This increase is most pronounced in the West-North-Central area which includes Iowa, Kansas, Minnesota, Missouri, Nebraska, and North and South Dakota.

A further breakdown of the figures for the West North Central states shows that the greatest increase, about 6756 per cent occurred in the use of nitrogen for direct application. This has been brought about by increasing soil impoverishment, the intensive research and educational program, and the availability of more solid nitrogen materials. It must be recognized, however, that all consumption figures are based on periods when demand was still in excess of supply.

While the increases are not as startling, the use of nitrogen in mixed goods has also increased markedly. This increase for the West North Central area for the five years under discussion amounted to 1186 per cent. Since fertilizer consumption for this area increased only 231.8 per cent, it immediately becomes apparent this increase in the nitrogen content of mixed goods can be explained only by an increase in the nitrogen content of these goods. Table 2 shows how the consumption of fertilizer mixtures containing various quantities of nitrogen have varied in the Midwest. The basic grade consumption figures used to calculate the percentage figures are more than 85 per cent complete.

The upward trend in the nitrogen content is apparent in all four areas but the discussion will be limited to the West-North-Central section. Mixtures with no nitrogen comprise only 5.58 per cent of the mixtures used in this area in 1947-48. The grades carrying 2 and 3 units of nitrogen have held their own over the last five years. The big increase in the use of nitrogen in mixed goods has occurred through the development of a market for 4 per cent nitrogen goods. This particular class of mixed fertilizers include 4-12-4, 4-16-0, 4-12-8, and 4-16-8 grades in a descending order of consumption.

This increased use of nitrogen in both direct application and mixed goods has led to a critical examination of the delivered price of nitrogen. Delivered prices per unit of nitrogen in Kansas City, Missouri, are as follows:

Source of Nitrogen	*Delivered Price per Unit*
Anhydrous Ammonia	$1.01
Ammoniating Solutions	1.45
Ammonium Nitrate	1.88
Uramon	2.33
Sulphate of Ammonia	2.51
Cyanamid	3.14
Nitrate of Soda	4.02

The farmers in the Midwest have been fortunate in the development of a new fertilizer industry which produces the cheapest form of nitrogen for direct application. The large-scale production of ammonium nitrate for agricultural purposes occurred simultaneously with the increased demand for nitrogen in this area.

As can be seen from the figures in Table I, nitrogen for direct application is only a small proportion of the total fertilizer used in the Midwest. This means the biggest potential outlet for nitrogen is in mixed goods and this outlet is continuing to grow. It is in this field that use can be made of the most inexpensive sources of nitrogen—ammoniating solutions and anhydrous ammonia.

The use of anhydrous ammonia has been limited to quantities which will give ammoniation rates of not over 2 to 2½ per cent. Sufficient ammoniating solution can be used to supply as much as six units of nitrogen in base goods but rarely more than four units in a finished fertilizer.

TABLE 1

Increase in Fertilizer Consumption in the Midwest

	1942-43 Consumption		*1947-48 Consumption*		*Per Cent Increase*	
	Fertilizer Tons	*Nitrogen Tons*	*Fertilizer Tons*	*Nitrogen Tons*	*Fertilizer Per Cent*	*Nitrogen Per Cent*
East North Central	1,643,853	19,159	3,500,319	80,102	112.9	318.1
West North Central	309,814	1,826	1,027,931	37,580	231.8	1958.1
East South Central	1,932,091	82,813	2,775,680	154,639	43.6	86.7
West South Central	546,606	28,151	1,032,880	65,219	89.0	131.7

TABLE 2

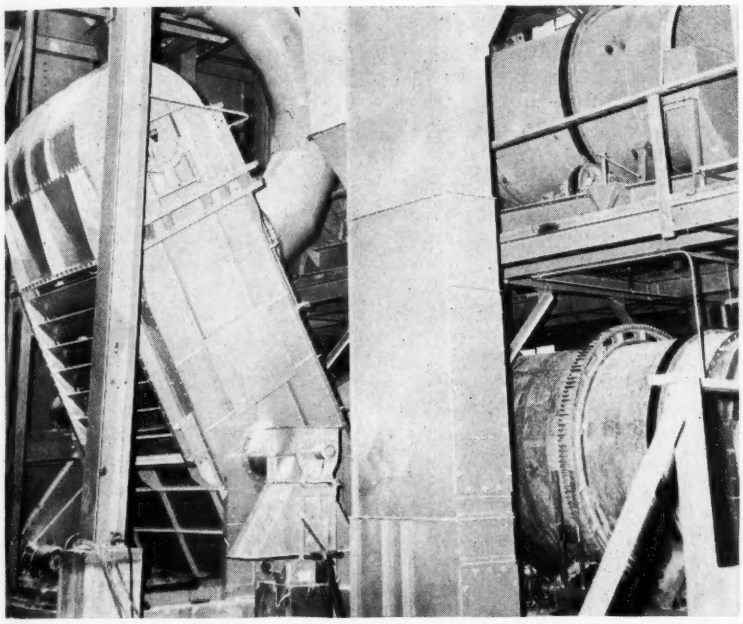
Variation in Consumption of Mixed Goods with Different Nitrogen Contents

Nitrogen Content Per Cent	*Consumption—Per Cent Total*							
	E. No. Central		*W. No. Central*		*E. So. Central*		*W. So. Central*	
	1942-43	*1947-48*	*1942-43*	*1947-48*	*1942-43*	*1947-48*	*1942-43*	*1947-48*
0	50.98	10.67	36.06	5.58	10.84	.....	6.16	2.13
2	31.89	53.07	34.39	33.26	9.89	10.26	.....	.....
3	12.35	28.21	18.28	14.93	9.14	10.65	54.84	3.10
4	3.68	5.52	7.82	44.47	69.62	34.91	37.95	43.77
5	0.74	0.97	.....	1.76	0.08	11.42	.....	37.24
6	.....	.....	0.04	.....	0.42	32.76	.....	12.08
7	.....	.....	.....	.....	.....	.....	0.35	.....
8	0.36	1.58	0.14	.....	.....	.....	.....	.....
9	.....	.....	.....	.....	.....	.....	0.60	.....
10	.....	.....	0.27	.....	0.01	.....	0.10	1.68

These drastic limits have been imposed because of the fear of phosphate reversion and the ultimate condition of the mixed goods. Certain factors causing reversion and poor product condition appear subject to control by process modifications. These modifications are being proven and the way is opening up for the preparation of higher nitrogen mixed goods from the inexpensive sources of nitrogen.

The major effort to achieve this goal has been directed toward a very rapid elimination of the heat generated during ammoniation. This is accomplished both by air circulation and the rapid evaporation of the moisture in the ammoniated materials. Some of the first serious work along this line was carried out in 1940. Harford and Keenen described a rotary cooler for ammoniated fertilizers in the April, 1941, issue of *Industrial and Engineering Chemistry*. The equipment consists of a slowly revolving cylindrical shell. The ammoniated goods are discharged directly from the mixer into the shell. A fan draws cooling air through the shell counter-current to the flow of the material.

A rather unique approach has been made to this problem in the Midwest where a re-cycle method has been developed. The only additional equipment necessary is an inexpensive return chute suspended in a sloping position to carry material from the conveyor belt back to the bottom of the base elevator. In the cycle the ammoniated material is discharged from the mixer into the base elevator which lifts the material and discharges it onto the overhead conveyor belt. An adjustable plow is located in any desired postion along the belt and at a pre-determined height above the belt. This plow scrapes off the required amount of material and kicks it onto the return chute. The material rolls down the chute and back into the base elevator. Material passing the plow goes directly to storage.



Inside view of one of the newest and most modern fertilizer plants showing the granulator, dryer and cooler used to make high-nitrogen, granulated fertilizer

Advantages of Re-cycle Method

Such methods accomplish several purposes. Primarily the rapid cooling necessary to minimize reversion is accomplished. At the same time, moisture is vaporized from the ammoniated goods under ideal conditions. Certain grades prepared by either of these cooling methods will have a larger percentage of well granulated particles than the same grades prepared by customary handling procedures. This is achieved either by the tumbling of the particles in the rotary cooler or by their rolling down the inclined chute. The re-cycle method also has the very decided advantage of leveling out the flow of ammoniated products. Since a batch mixer operates on about a 2-minute cycle, the rest of the equipment, which is keyed to the mixing operation, works on the same cycle and is running empty for probably a minute and a half. Plowing off a portion of the load on the conveyor belt can be handled in a manner to distribute this peak load over the full 2-minute cycle. This will give the most efficient cooling, moisture evaporation, and operation of equipment.

These handling methods, because of their limited capacities, are unsuitable for the large manufacturers. In such plants, rehandling is the best method for obtaining rapid cooling and evaporation of moisture. Freshly ammoniated goods are carried directly to one of two handling bins located close to the mixer. As one bin is being filled, the material in the other is being rehandled by an operator with a motorized shovel. A stub elevator close to the rehandling bins lifts the material to the conveyor belt which carries it to ultimate storage.

Manufacturing methods, such as those described, are enabling the fertilizer manufacturers to produce higher nitrogen goods from the most economical sources of nitrogen. Ammoniating solutions have been used to supply all the nitrogen in 8–32–0, 6–24–12, 6–24–0, and 7–35–0 grades. It has also been possible to produce 8–16–16 in which six units of nitrogen are obtained from solution and 10–20–0 or 10–20–10 in which 8 units come from the ammoniating solutions. Further work on the improvement of manufacturing and handling methods and the development of improved solutions will undoubtedly enable the fertilizer manufacturer to take care of the increasing agricultural demand with a further savings to the farmer.

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Front cover illustration shows part of the Ammonia Plant of Spencer Chemical Company.

THE LETTERS COME IN

THE RESPONSE to our editorial in the last issue, "The Next Hundred Years" was made up of a good cross section of the commercial fertilizer industry. Many of you who did not write were probably represented by comments in the letters of those who did, but we would like to hear more from manufacturers, salesmen, agronomists, and other experts who have definite suggestions to make on a good public relations program for the industry as a whole.

A new day is coming in agriculture and our industry must act as a herald to this new day of agricultural industry "stepped up" by machines that make possible the multiplication of crop production. Machines have been helped by the advance of research in the commercial fertilizer field and together this combination has enabled a farmer of today to do what industry has already done—multiply his individual effort many times.

Now comes the problem the industry faces.

Commercial fertilizer manufacturers must educate the users of fertilizer to the new mixes, the new methods of application, the new uses of fertilizer on the new varieties, and the importance of plant food products in pastures, dairy farming, soil conservation, truck farming, and all of the other sections of the agricultural field where fertilizer may be the answer to many problems.

We can't deny that.

As many have said before, the future of a country and a people depends not on its culture, its art or its commerce, but first of all on the land.

As we said in the editorial in the March 4 issue, "The fertilizer industry is the keystone in the arch of an agricultural bridge leading to a new and better world in which to live.

TO TIE IN WITH THE BASEBALL SEASON, we might say that commercial fertilizer is the "coach" of the American Agricultural Team, and as the "coach" it is very important what the industry does about

the next few "times at bat" in Washington. It is important, as "coach," to call the plays right or else face the danger of "striking out" and allowing the Government Control Team to come to bat.

Surely there are enough heavy-hitters in our virile American industry to bring us out ahead when the final score is put up on the board for all Americans to see.

Now is the time for all good fertilizer men to come to the aid of their industry.

I. M. & C. FERTILIZER PLANT TO REBUILD

Reconstruction of the building destroyed by fire on February 23 at the Texarkana, Arkansas, fertilizer plant of International Minerals & Chemical Corporation will be undertaken immediately according to an announcement by Maurice H. Lockwood, vice-president in charge of the plant food division.

Cost of the total damage is still undetermined although the loss is covered by insurance. The fire consumed the main building while the smaller nearby structures were saved including the warehouse and office, the ammonia storage tanks, and the superphosphate plant.

The design of the new structure will incorporate the latest improvements which the company has devised for the modernization of its fertilizer plants.

SUMMERS FERTILIZER HONORS N.K. TOTMAN

N. K. Totman, treasurer of the Summers Fertilizer Company, Baltimore, Md., and Miss Doris Zaiser, secretary, were recently honored at a dinner to commemorate their twenty-fifth anniversaries with the company. Suitable mementoes of their company service were presented. Both have held their present senior executive positions for the past several years. Mr. Totman joined the company in 1925 as a factory shipping clerk and Miss Zaiser joined in the same year as a clerk in the billing department

NFA ANNOUNCES LIST OF CONVENTION SPEAKERS

Many members of the commercial fertilizer industry are making plans now to attend one of the most important conventions in the long history of The National Fertilizer Association to be held at the Greenbrier, White Sulphur Springs, West Virginia, June 12–14. The program and other activities of the meeting will be built around the general theme of the industry's centennial year: "A Century of Progress with Fertilizers."

In addition to distinguished speakers from the ranks of agriculture, business and government, the Association has planned other special features appropriate to the occasion. Members and contributors have shown interest in NFA's invitation to display exhibits illustrating the progress which has been made during the industry's century of achievement. Other features of the centennial meeting will be publicized in later issues of AMERICAN FERTILIZER.

Those who have already accepted the Association's invitation to address the convention and their subjects are: Allan B. Kline, president, American Farm Bureau Federation, "A Century of Progress on the Farm"; Robert M. Salter, chief, Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture, "A Century of Progress in Fertilizer Research"; and Ralph Robey, chief economist, National Association of Manufacturers, "A Century of Progress in Our Country's Economy."

The Plant Food Research Committee of the Association will present a panel on "A Century of Progress in Compounding and Utilizing Fertilizers," with the following among those participating: H. B. Siems, director of research, Plant Food Division, Swift & Company; S. D. Gray, northeast manager, American Potash Institute; H. H. Tucker, president, Coke Oven Ammonia Research Bureau; K. D. Jacob, head, Division of Fertilizer and Agricultural Lime, Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture; and Vincent Sauchelli, director, Agricultural Research, Davison Chemical Corp.

Annual addresses will be delivered by Ray King, chairman of the Board of Directors of NFA, and by Russell Coleman, president. The centennial banquet, followed by an entertainment program, will be held on Tuesday, June 13.

On Monday, June 12, meetings have been scheduled of the Board of Directors, the Plant Food Research Committee and other committees of the Association.

U. S. POTASH MOVES

The United States Potash Company has moved its executive offices to new and larger quarters at room 3407, 30 Rockefeller Plaza, New York. The telephone number is Columbus 5-5813. The company previously occupied different quarters in the same building.

EVEN ON GOOD LAND IT PAYS TO FERTILIZE

A corn fertilizer demonstration recently reported from Stoddard County, Missouri, shows that there's profit in using fertilizers even on good land if the applications are guided by chemical tests to show what plant foods are lacking.

On 18 acres of good corn land, Otto Richmond left a check strip that received no fertilizer at all. On the rest of the field he applied 150 pounds per acre of a fertilizer mixture balanced to fit the soil needs. The unfertilized plot, says County Agent Ernest Rouse, yielded 88 bushels of corn per acre; the rest of the field, fertilized, averaged 97 bushels of corn per acre. For $69.50 invested in fertilizer for a period of 7 months, Richmond got $162 worth of additional corn, or a net profit of $92.50.

Observation of the field also showed that not only was the corn better, ear for ear, on the fertilized area, but the stand was nearly 1000 stalks more per acre where ferilizer was used even though the rate of planting was the same over the entire field.

WISCONSIN TONNAGE DROPS

Fertilizer Sales Off First Time Since War

For the first time in five years the sales totals of fertilizer in Wisconsin had dropped. Throughout the state there has been a loss in tonnage but a continued increase in plant food units.

Reports compiled by W. B. Griem in charge of the food and fertilizer laboratory of the Wisconsin Department of Agriculture, show that farmers of the state purchased 335,834 tons of fertilizer in 1949. This is 69,287 tons less than the 1948 total of 404,121 tons—a reduction of 17 per cent.

The plant food story is as follows: 1948—3.12–13.10– 9.75 total 25.97; 1949—3.07–12.88–12.05 total 28.00 units of plant food.

Most of the decrease insales came during the fall season. Fall purchases last year total 56,398 tons as compared to 116,846 tons in 1948. Spring sales were about 8,000 tons less than a year ago.

Griem's figures show that Wisconsin farmers last year bought 209,-817 tons of complete mixed fertilizer. Sales of phosphate and potash mixtures totaled 93,861 tons, and superphosphates 8,175 tons. Sales of other fertilizing material total 23,981 tons.

One of the notable changes in fertilizer purchases last year was a marked increase in the use of the 3-12-12 grade, which now represents 63 per cent of all the complete mixed fertilizer sold in the state. There was also a notable drop in the use of the 2–12–6 grade, where the tonage dropped nearly 50 per cent.

Fertilizer purchases in Wisconsin have climbed steadily since 1933, when only 16,311 tons were delivered to farmers. The all-time peak was reached last year with a total of 404,121 tons.

Of interest to AMERICAN FERTILIZER readers is the list of the eight top analyses with sales of over 10,000 tons, as follows: 3–12–12: 132,345 tons; 0–20–10: 35,593 tons; 2–12–6: 25,023 tons; 0–20–20: 17,452 tons; 3–9–18: 16,405 tons; 0–9–27: 14,-899 tons; 0–12–12: 13,800 tons; 4–12–8: 12,376 tons.

More detailed statistics are in the 1950 Wisconsin fertilizer inspection bulletin.

MAJOR PEST OUTBREAKS PREDICTED BY NACA

Warnings are now out from the agricultural chemistry industry that infestations of *three major insect* pests exceed the intensity of 1949 outbreaks. The group urged farmers and growers to review their chemical control programs, and place at least a partial order for their anticipated needs.

The boll weevil, European corn borer, and grasshopper are the three major insects expected in greater numbers by entomologists of the Bureau of Entomology and Plant Quarantine, USDA. Reasons for the anticipated heavy outbreaks are the mild winter over much of the country so far this year, and the heavy population of the insects last year.

"Many progressive growers have come to look upon the practice of early ordering as insurance," according to Lea S. Hitchner, Executive Secretary, National Agricultural Chemicals Association. "Industry has geared its production to meet the requirements for this year's control program, and is making available to farmers and growers the widest range of chemicals in history. Supplies are expected to be ample to meet requirements; however, to insure adequate quantities of a given chemical, at least a partial order should be made in advance of the insect season," he said.

BORAX IS NEEDED SAYS LONG ISLAND

According to a recent story in the Long Island Farm Bureau News, cauliflower needs 15 pounds of borax per acre to prevent brown rot on the heads and hollow stem. Where the fertilizer did not contain enough borax, it may be applied as a sidedressing with nitrate of soda or it may be sprayed onto the plants. If the weather is rainy enough to leach the borax out of the soil, it is advisable to sidedress cauliflower with 10 lbs. of borax per acre, even though the fertilizer contained 15 pounds (¾ of 1%) of borax.

	1948			*1949*		
	Spring	*Fall*	*Total*	*Spring*	*Fall*	*Total*
Complete Mixed Goods	194,662	60,098	254,720	187,997	21,820	209,817
Phos. & Potash Mixtures	62,439	38,458	100,897	69,906	23,995	93,861
Superphosphates	15,502	5,161	20,663	5,609	2,566	8,175
Other Materials	14,712	13,129	27,841	15,924	8,057	23,981
Total Tonnage	287,245	116,846	404,121	279,436	56,398	335,834

BONE MEAL TANKAGE BLOOD

SHEEP—COW—POULTRY MANURE

CASTOR POMACE NITROGENOUS

GROUND TOBACCO STEMS HOOF MEAL

ALL FERTILIZER MATERIALS

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FERTILIZER MATERIALS MARKET

NEW YORK

End of Coal Strike Speeds Production of Sulphate of Ammonia. Ammonium Nitrate in Heavy Demand. Organics Prices Advancing. Better Movement of Superphosphate and Potash Reported

NEW YORK, March 14, 1950

Sulphate of Ammonia

With the end of the coal strike production will increase at certain coke oven plants and the supply is expected to be adequate to take care of this season's fertilizer needs. Some large orders were recently placed for export for shipment to Korea and these orders were said to have been booked at low prices.

Ammonium Nitrate

A heavy demand was evident from certain parts of the South and leading producers were entirely sold our for their anticipated season's production. Because of the low price of this material, some buyers prefer it to other forms of nitrogen.

Nitrate of Soda

Several large lots are now afloat from Chile to this country and supplies are adequate to take care of the top dressing demand. No price changes were noted.

Nitrogenous Tankage

This material is in demand and producers are still sold ahead for several months. Unless a buyer has a contract, it is difficult to secure any material for quick shipment.

Castor Pomace

This material maintains a strong market position, due to lack of offerings and insistent demand. Last sales made on basis of $30.50 per ton, f.o.b. production points.

Organics

Tankage and blood were in better demand from both the fertilizer and feed trade and sales were made at advancing prices. Blood sold at $7.75 ($9.42 per unit N), f.o.b. Eastern points and tankage sold at the same price. Soybean meal advanced with buying by the feed trade, with the market nominally quoted at $54.00 per ton in bulk, f.o.b. Decatur, Ill. Linseed meal in bulk, f.o.b. Eastern points, sold at $64.50 per ton for nearby shipment and cottonseed meal was quoted at $57.00 per ton, f.o.b. Southeastern points for prompt shipment.

Fish Meal

Due to increased supplies arriving from abroad and the nearness of the fishing season in this country, supplies were plentiful and an easing in price was noted. Imported material running about 60 per cent protein sold at $155. and some menhaden at about the same figure. Considerable quantities of unsold material from abroad were offered.

Bone Meal

A good demand is noted from the fertilizer trade for both raw and steamed bone meal but demand for feed has slowed up somewhat, due to the increased importations of the feed grade.

Hoof Meal

Scales were reported on the basis of $7.00 per unit of ammonia ($8.51 per unit N), basis f.o.b. Chicago and with limited production, producers are not having much trouble in selling their output.

Superphosphate

Since the end of the potash strike a better movement of this material is reported, but supplies are rather large at some production points. Triple superphosphate is in demand and a shortage is reported in some sections as some buyers underestimated their requirements of this material for this season.

Potash

Many manufacturers are still short of this material for their immediate requirements. Domestic producers have stepped up shipments and are working at capacity in most cases and increased imports have arrived at various Atlantic ports. With the peak of the shipping season at hand, some fertilizer manufacturers have no stocks of potash on hand at all.

Conditioners

Cocao shells and garbage tankage and other low grade ammoniates are moving rather slowly at the present time, due to lack of demand.

CHARLESTON

Organics and Potash Still in Short Supply. Shipments of Superphosphate Increase. Chemical Nitrogen Adequate

CHARLESTON, March 14, 1950

Organic ammoniates are in tight supply and prices strong. Superphosphate movement is expanding but stocks continue adequate. Potash production in the Carlsbad area is close to normal, but mixers in various sections continue short of their immediate needs.

Organics — Organic ammoniates for fertilizer use continue in extremely tight market position. Producers of domestic nitrogenous tankage are sold up for the next several months. Prices are nominally around $4.00 per unit of ammonia ($4.86 per unit N), in bulk, f.o.b. production points. Dried ground blood and packing-house tankage are being used to a limited extent, but are too high priced for most fertilizer manufacturers. Imported organics are quoted for arrival too late to be used this season.

Castor Pomace—Producers continue in a heavily sold position and offerings are practically nil. Last sales made were at $30.50 per ton in bags, f.o.b. Northeastern production points. Prospects for March forward supplies are poor.

Dried Ground Blood—Chicago market is stronger with asking price around $8.00 to $8.50 per unit of ammonia ($9.72 to $10.33 per unit N), f.o.b. Chicago. The New York market ranges from $7.75 to $8.00 ($9.42 to $.972 per unit N), based on last sales.

Potash—It is reported that production in the Carlsbad area is now close to capacity. Approximately 8 to 10 cargoes of Russian muriate are expected to arrive during March. Most of this material is reported sold on the basis of 73 cents per unit of K_2O, c.i.f. Atlantic port.

Ground Cotton Bur Ash—Sales of this source of carbonate of potash continue at 65 cents per unit of K_2O, in bulk f.o.b. Texas production point, for material testing 30 per cent to 40 per cent K_2O and 3 per cent to 4 per cent chlorine.

Phosphate Rock—Stocks continue adequate to meet the demand except in the low grade rock, supplies of which have been temporarily reduced by export movement. Prices continue firm.

Superphosphate — Seasonal expansion of demand is being shown by increased shipments. Current stocks are adequate. Prices continue steady.

Sulphate of Ammonia—Demand from consumers is increased and the market is steady. Stocks of synthetic production have been recently reduced by Government purchases for shipment to Asia.

Ammonium Nitrate—Demand is steady for domestic production, and for Canadian material demand exceeds supply slightly. No changes in prices have been noted.

Nitrate of Soda—Prices continue the same and demand seasonal with stocks adequate.

PHILADELPHIA

Market Quiet Except for Spot Potash. Ample Supplies of All Other Materials Available

PHILADELPHIA, March 14, 1950

The market in most raw materials is rather quiet. Organics are stronger and there is urgent demand for spot potash. Present unusual cold weather tends to slow down normal seasonal movement.

Sulphate of Ammonia—With potash moving more freely, the demand for mixing is reported improved, and while coke-oven production was cut back because of the coal strike, the supply is still rather ample.

Nitrate of Soda—Demand is seasonally normal, and while domestic production has been reduced, the supply is fully sufficient to meet all requirements.

Blood, Tankage, Bone—Blood and tankage are quite a little stronger, due to increased feeding demand, and both articles are now quoted at $8.00 per unit of ammonia ($9.72 per unit N). Bone meal is easier, due to foreign offerings.

Castor Pomace—Production is reported as rather uncertain and there are no offerings presently in the market. Demand is very active.

Fish Scrap—The Menhaden Meal market is easier, with quotations in Baltimore area at $160.00, and scrap nominal at $150.00 per ton. Recent heavy importations are reported.

Phosphate Rock—Shipments are moving on a more nearly normal basis and stocks are reported in sufficient supply to meet present demands.

Superphosphate—Demand is gradually improving and prospects for the season are much better. No price changes are indicated.

Potash—Shipments are not coming through as rapidly as had been hoped, and the demand for spot material is quite active. Not much resale is in evidence.

CHICAGO

Organics Market Stronger and Prices Show Advances. Buying Extensive.

CHICAGO, March 14, 1950

The Midwestern market on animal proteins shows considerable strength and prices are advancing. Buying interest is quite broad and limited available offerings are firmly held. Meat scraps 50 per cent protein ground and sacked are generally held at $115.00 to $120.00

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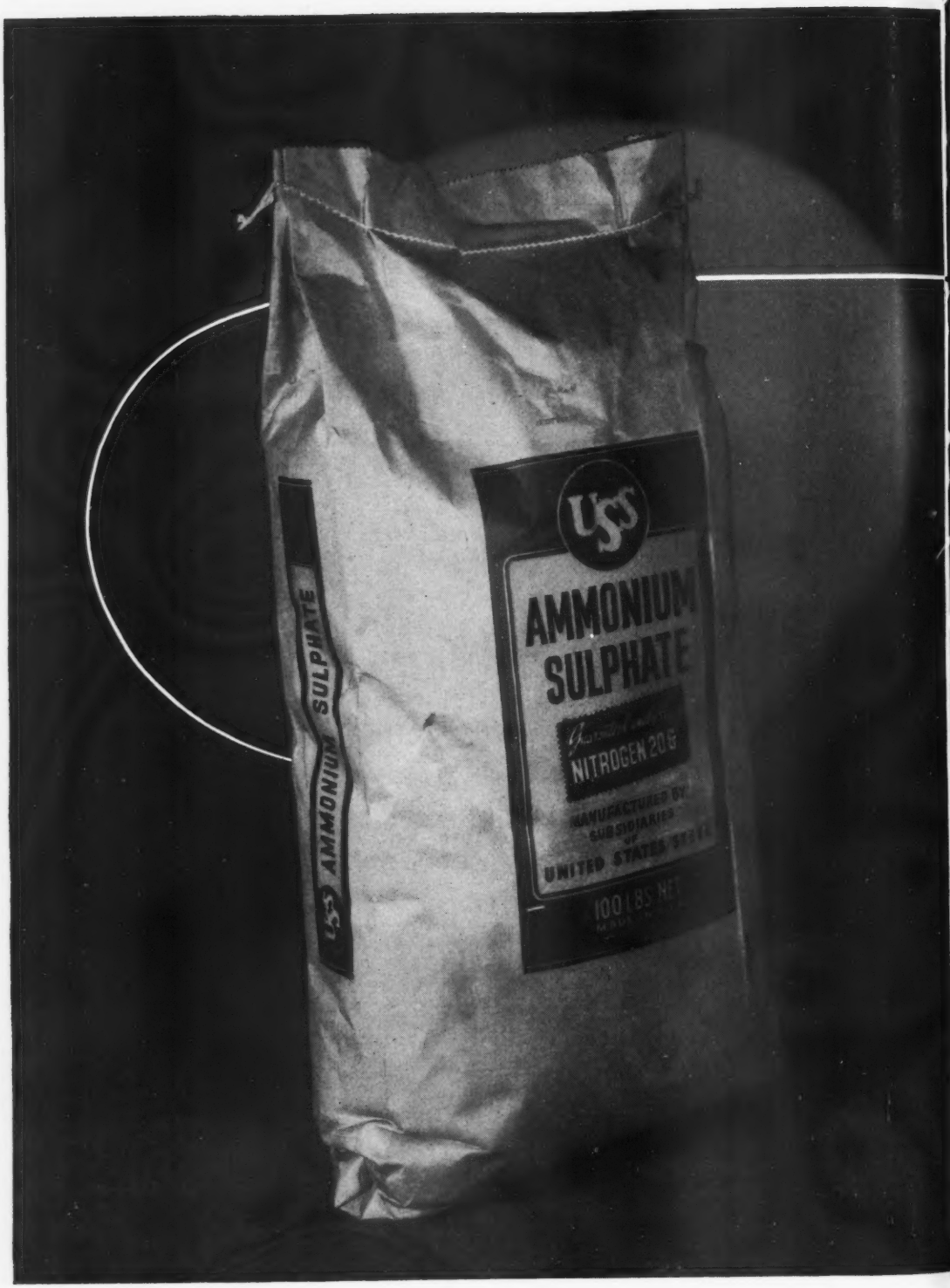
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per ton. Digester tankage, 60 per cent protein, ground and sacked is firmly quoted at $110.00 to $118.00 per ton. Unground dry rendered tankage is selling at $2.05 to $2.10 per unit of protein. Wet rendered tankage ranges from $8.50 to $9.50 per unit of ammonia ($10.33 to $11.55 per unit N), according to test. Dried blood is firmly held at $8.00 per unit of ammonia ($9.72 per unit N), against previous trading at 50 cents per unit lower. Steamed bone meal 65 per cent B. P. L. is listed at $75.00 to $80.00 per ton and raw bone meal 4½—45 per cent at $65.00 to $70.00 per ton.

1949 SYNTHETIC NITROGEN FIGURES TOP 1948 TOTAL

Despite a general decrease in the 1949 output of the principal chemicals manufactured in this country, the two products used in the fertilizer industry—ammonium nitrate and synthetic sulphate of ammonia—showed increases over the 1948 figures. This is particularly true of synthetic sulphate of ammonia which more than doubled its 1948 output.

The figures for these two products are as follows: *Ammonium nitrate:* (1949) 1,018,706 short tons; (1948) 988,342 short tons. *Synthetic sulphate of ammonia:* (1949) 569,652 short tons; (1948) 226,188 tons.

In addition to the latter figures, production of sulphate of ammonia at by-product plants from by-product ammonia and purchased synthetic ammonia totaled 815,590 tons in 1949.

NEW NFA BOOKLET COLORFUL AND FACTUAL

A Century of Progress with Fertilizers is the title of the new and colorful brochure published recently by The National Fertilizer Association.

The booklet, filled with comments from the leading figures in agriculture, presents interesting testimony of the unique role of fertilizer in the present economy. Dr. W. E. Chace, publicity director of NFA, and his staff have added another fine promotional pamphlet to the material now available for publicizing the celebration of our industry's centennial year.

Distribution of this booklet is being made through members of the Association as well as from Association headquarters. A copy can be obtained by writing to the NFA offices, 616 Continental Building, Washington 5, D. C.

CORNELL MAN HEADS N. E. SOIL COMMITTEE

The Northeastern Soils Research Committee recently held a two-day session at the Connecticut Agricultural Experiment Station.

Dr. Richard Bradfield of the Cornell Agricultural Experiment Station was elected chairman of the committee for the next two years, succeeding Dr. Firman E. Bear, New Jersey Experiment Station. Dr. R. Q. Parks of the Division of Soil Management and Irrigation, U. S. Department of Agriculture, was re-elected secretary.

The members passed a resolution that "steps be taken for increasing the activity in obtaining a basic soil resources inventory of the United States." Dr. C. L. W. Swanson of the Connecticut Station heads the sub-committee on soil survey.

Plans were completed for a study of soil structure problems in the northeast. The five stations cooperating in the study are Connecticut, New Hampshire, New Jersey, Cornell and Pennsylvania. The subcommittee in charge is headed by Dr. F. G. Merkle of Pennsylvania.

The importance of radioactive tracers as tools in agricultural and plant science research was stressed in a talk by Dr. Ernest C. Pollard, associate professor of physics at Yale University. Dr. Pollard cautioned, however, that these tools must be used correctly and must not be considered adaptable to every type of research.

Experiment Station and U. S. Department of Agriculture representatives from the six New England states, New York, New Jersey, Pennsylvania, Maryland, Delaware, West Virginia and Washington, D. C., attended the meetings.

OVERSEAS AMMONIA

Heyden Chemical Corporation, New York, was awarded a contract for supplying 91,600 tons of anhydrous ammonia for the army's overseas fertilizer program by the Departtment of Defense. The total cost of the contract was stated by the department to be $5,422,308. The contract was let by Joliet Arsenal, Joliet, Illinois.

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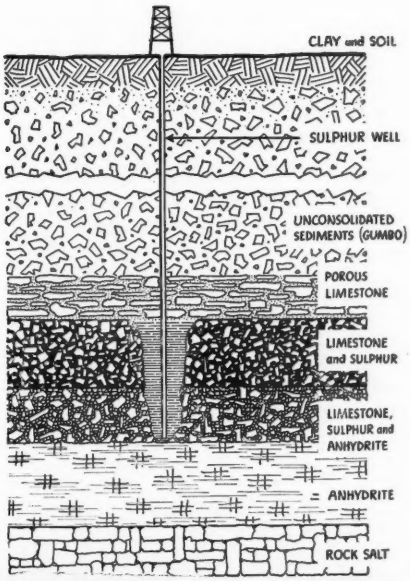
SULPHUR

*Interesting Facts Concerning This Basic Raw Material from the Gulf Coast Region

*DEPOSITS . . .

Practically all of the elemental sulphur used in this country comes from mines in Louisiana and Texas.

There, the sulphur deposits occur in the cap rock overlying certain salt domes. The sulphur is mined at depths of 300 to 2,000 feet below the surface. It is melted in place by pumping into the deposit water heated under pressure to a temperature above the melting point of sulphur. The melted sulphur flows away from the limestone and is pumped to the surface where it is allowed to solidify in vats. By such means sulphur nearly 100% pure is produced.





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VPI EXPERT SAYS "X" THEORY UNTRUE

The theory that "X" Disease in cattle might be caused by certain pasture management practices is supported by no evidence, according to Dr. E. P. Johnson, animal pathologist at Virginia Polytechnic Institute, Blacksburg.

The disease, he states, has occurred on practically all soil types and on pastures which have been improved and those that have had no applications of commercial fertilizers.

Some scientists have pointed out that since plants vary in their ability to absorb certain elements, they might take up an increased amount of possibly toxic substances. This would occur after a marked change in soil conditions, such as might come from heavy fertilization. Doctor Johnson believes that these statements would need experimental evidence to prove or disprove them.

N. ENG. PASTURE CONTEST SUMMARIZED BY GAUNT

In a recent University of Massachusetts Extension Service pamphlet, "Dairy Digest," Stanley N. Gaunt, Extension Dairyman, summarizes the 1949 New England Green Pasture Contest. One highlight of his conclusions is that heavy fertilization paid. The average amount of fertilizer used by the 18 winners during the contest was 1,443 lbs. per animal unit. The highest recorded was 3,400 lbs., the lowest 580 lbs. Most of these men applied 500 lbs. in the fall and repeated it in the spring or after the first cutting, or both in some cases. All but two were using superphosphate in addition to the application of 0–14–14 or 0–19–19. A few were using fertilizers containing nitrogen, but most did not in order to encourage the legumes.

OHIO REPORTS APPLE NITROGEN EXPERIMENT

Ohio's heavy crop of apples during 1949 calls for special consideration of the 1950 nitrogen fertilizer program according to J. M. Beattie, of the Ohio Experiment Station.

As a general rule, fruit growers do not experience two successive years of heavy apple crops on a given tree. The principal reason for this, continues the horticulturist, is that heavy production is an exhaustive process, and since fruit buds were formed last summer for this year's crop it is likely that fruit bud formation was adversely affected. If that proves to be the case, a light bloom and resultant light crop may be anticipated this season on trees which produced heavily last year.

Recent experiments at the Ohio Station have shown that with light crops the need for nitrogen is reduced. Also, heavy nitrogen fertilization in light crop years will result in the production of poorly colored fruit of low quality. All indications point, therefore, to the necessity for moderation in the application of nitrogen fertilizers this spring. Only in rare cases should the application be in excess of one-fourth pound of a 16 per cent nitrate of soda per year of tree age. Where exceptionally heavy production occurred last season, the amount should be reduced to approximately half of this amount.

If a moderate to heavy bloom should occur, says Beattie, enough nitrogen to bring the total application up to the one fourth pound per year of tree age rate may be applied at blossoming time. This application must not be delayed and nitrogen applied should be of a quickly available form.

NEW KEYSTONE STATE CORN CLUB CHAMPS

Frank G. Bamer, extension agronomist of Pennsylvania State College reports that for the second successive year, the time-honored practice of including good sods in the crop rotation, coupled with the use of commercial fertilizer, proved a deciding factor in the Pennsylvania Corn Club contest for 1949.

As in 1948, top producers turned under legume sods for their corn. W. H. Oaks and his son, Kenneth, of Greencastle, Pa., first in 1949 with 153.6 bushels per acre, plowed down 3-year alfalfa sod. They also applied fertilizer. The alfalfa, Bamer explains, enriched the soil with nitrogen, while the sod provided organic matter for plant nutrients, soil tilth, and maximum moisture-holding capacity.

Corn plants, of a hybrid adapted to that locality, number 13,930 per acre. Ears averaged .77 pound each, or half again as much as the half-pound size desired for optimum yield. Ear weight indicated relatively high fertility, also that the stand could have been thicker and the yield greater.

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OREGON AGRONOMIST REPORTS INCREASES

Use of commercial fertilizer has increased more than five times in Oregon during the past ten years, says Arthur S. King, Oregon State College extension soil conservation specialist, who adds that the rapid increase in commercial fertilizer use appears likely to continue if farmers are to hold their own against plant food losses.

In 1939, King says, commercial fertilizers were providing only one and one-half pounds of plant food per Oregon crop land acre. Ten years later, increased use was providing eight pounds. Despite this increase, King declares that it is scarcely enough now to keep up with natural plant food losses by leaching under good farming conditions. It represents only a minute fraction of the plant food removed by crops harvested each year.

Oregon farmers use slightly less than 4,000 tons of commercial plant food annually as recently as 1939. Today the specialist estimates Oregon's annual fertilizer purchases at upwards of 100,000 tons annually.

MISSOURI MAN SEES NEW AGRICULTURAL ERA

In Missouri, where you have to show 'em, Dr. C. M. Woodruff, member of the University of Missouri Soils Department, is telling them about a new era.

"We are moving into a new agricultural era due to the manufacture of nitrogen fertilizer since the war," Woodruff told those attending the Seed, Soil and Plant Food short course at Columbia, Mo., recently.

"Growth and yields will be determined from now on by the amount of nitrogen applied, while in the past it was determined largely by the amount of nitrogen which became available from the organic matter in the soil, and from the use of legumes," Woodruff said. He found in studying 60 years of data that of the total nitrogen present in the soil only about 2 per cent is available each year.

In contrast to this small amount of nitrogen from the soil for plant use he pointed out the huge amount of nitrogen which may be supplied to plants through an application of today's commercial nitrogen fertilizer.

Although he believes that the application of nitrogen will be the measuring index of crop yields in the future, Woodruff reminded those attending the session that in order to use nitrogen effectively the soil must be given enough potash, phosphorus, and lime to keep the plant nourished at all times.

CORNELL CROP EXPERT ISSUES POTATO REPORT

From Cornell's vegetable crops specialist, Professor R. J. Pratt comes some late potato growing information.

In his latest bulletin he says: "Most things that make the crop big make potatoes good. The following are 'must' in a first-rate potato project: (1) Disease-free seed of a blight-immune variety; (2) Plenty of seed from 25 to 30 bushels to the acre; (3) Seed that has short, thick, green sprouts at planting time; (4) Good soil with an acidity of about pH 5.0; (5) Plenty of fertilizer, at least one ton of 4–8–10 or 5–10–10 to the acre; (6) Half the fertilizer plowed under and the other half put in bands, near the row; (7) Good weed control; (8) Thorough insect control with DDT; and (9) Care in digging and handling the potatoes."

Keeping Ahead of Plant Dise

(Continued from page 7)

they are still news, not after the have become back numbers. This promptness increases many time their usefulness to plant patholo gists, as well as to the fungicide industry which is vitally interested in these tests.

Another service that the Plant Disease Survey renders both plant pathology and industry is a regular column on plant disease news in a chemical trade journal. Through this column the chemical industry obtains an understanding about the great number and variation in plant disease problems, whether they can be helped by chemical means or not, and plant pathology will surely benef t in the long run from this understanding.

For various reasons, partly because it serves all fields of plant disease study, partly because of its cooperative organization, partly because of the *Plant Disease Reporter* the Survey has become more and more acknowledged as one of the integrating forces in plant pathology. There has been no specia effort to achieve this place, but the general strong feeling of necessity for a unifying element and the obvious fitness of the Survey to fill this need has made this outgrowth of its functions almost inevitable.

Epidemics and War Bring Out Importance of Plant Disease Information

At times we tend to become rather complacent about our knowledge concerning plant diseases. We begin to think that we have them confined, as it were, within a wall of proven facts. But every once in a while a disease breaks down this wall and "escapes" from it into a serious widespread epidemic, with consequences sometimes disastrous and always enlightening. Or when

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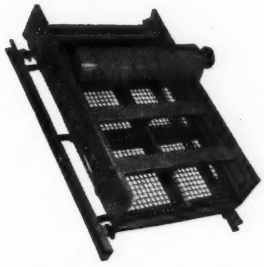


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some outside event compels us to pay attention to the plant disease situation as a whole, we discover how incomplete or narrowly specialized our knowledge actually is and how much we need both to broaden it and to fill in the gaps. Of course in times of war when we must use every bit of information to protect and maintain crop production, we have the prime instance of such outside pressure.

The Plant Disease Survey was first established as an independent unit during the first World War. At that time much less was known about the development, importance, and distribution of plant diseases, even some of the most common, than now, and the War made this lack of knowledge obvious and serious. The contribution of the Survey to the national welfare was to assemble and analyze plant disease information so that danger points could be recognized; to act as a "watch service," i. e., to keep a lookout for potential menace from plant diseases, whether already present or newly introduced; and to keep plant pathologists promptly informed of plant disease developments during the growing season.

As time went on, plant disease investigations became more and more divided and specialized so that pathologists no longer had an opportunity to observe or report plant diseases in any comprehensive or regular manner. Through a series of drought years, effects of many plant diseases were practically negligible and interest in reporting them reached a low ebb. Largely because of the Survey's efforts, distribution and relative importance of economic plant diseases had become pretty well known in a general way. There was a tendency to believe that both quantity and usefulness of this type of information, i. e., on where diseases occurred, how much damage they caused, what was to be expected from them under given conditions, etc., had reached a saturation point and that nothing was to be gained from further accumulation. How mistaken this belief was was demonstrated without any doubt in different ways by two entirely separate circumstances: (1) the Emergency Plant Disease Prevention Program, and (2) the 1946 tomato late blight epidemic.

The Emergency Plant Disease Prevention Program

Many County Agents gave a great deal of help to field men of the Emergency Plant Disease Prevention Program conducted by the Plant Disease Survey during World War II, from 1943 to 1945. Some may wonder why, since there was already one organization with the specific purpose of collecting plant disease information, it should be necessary to set up a second group with what seemed to be the same objective. The paramount reason was the primary function of the Emergency Program, which was to protect crops against malicious destruction by means of plant diseases. This required secrecy and a staff devoted to the one end and large enough to accomplish it. Achievements of this fundamental defense task have never been divulged.

Published results of the Program's activity were a by-product; nevertheless they were of the greatest aid to agriculture during the War period, and later. They showed that the ever-changing nature of plant disease occurrence soon makes our information out-of-date or even misleading without constant and widespread watchfulness. On the positive side they demonstrated conclusively how much help planned surveys by a competent professional staff do bring to the fight against plant diseases.

For our purpose, we need to note only that certain activities were among the direct forerunners of the Crop Plant Disease Forecasting Project. One was the "warning service" rendered by the Emergency Program reports on the appearance and progress of potato late blight during the unprecedented epidemic in Southern States in the 1943–44 season. Another was the locating and reporting of incipient disease outbreaks to be sure that scarce chemical control materials reached the places where they were needed in time to do some good, as far as was possible during the War.*

The 1946 Tomato Late Blight Epidemic

The tomato late blight epidemic of 1946 was one of the most severe plant disease outbreaks ever suffered in this country. Its attack was wholly unexpected, and its history was overwhelming proof that for this kind of disease, progress and development should be watched and reported frequently and promptly during the growing season, so that some advance notice could be obtained that would allow preparation for control.

General recognition of this need led to formally expressed demand that resulted in the establishment of a preliminary Warning Service for tomato late blight in 1947, conducted by the Plant Disease Survey. Probably this Warning Service attracted more attention and became better known than any other function of the Survey. The later Warning Service inherited this publicity. It is easy to see why this interest was aroused. The main reason is the eventful history of late blight, which has created for it such a dramatic "personality" that its every appearance is bound to be newsworthy. Since the Warning Service was established as the result of a spectacu-

*Editors Note—These non-restricted accomplishments are analyzed briefly in the *National Country Agent and Vo-Ag Teacher* for June, 1949 (USDA'S Wartime Plant Disease Survey, by Paul R. Miller, pp. 11, 30).

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lar late blight epidemic, it was naturally in the spot-light. Another reason, probably of more lasting significance, is that the activities of the Warning Service affect concretely a great number of persons

The general satisfaction with the operation of this preliminary Warning Service was the deciding factor in the authorization of the Crop Plant Disease Forecasting Project under the Research and Marketing Act.

The Research and Marketing Act Crop Plant Disease Forecasting Project

County Agents in sections of the country where the Forecasting Project is already functioning take an active and essential part in its success and know a great deal about its general purpose and operation. Much of what follows will already be familiar to them. However, a rather full account is desirable for County Agents in States not yet included, so that when a problem that does need its services comes up in their areas they will know what the Project is designed to accomplish and how it operates, and how they themselves can both help in and be aided by its work. Also, explanation of the Project's specifically concentrated activity will help in understanding the Plant Disease Survey's broader interests, since the Project is essentially an intensification of the Survey.

Objectives of the Crop Plant Disease Forecasting Project and Relation to the Purpose of the Research and Marketing Act. The Research and Marketing Act was designed" . . . to promote the efficient production and utilization of products of the soil as essential to the health and welfare of our people and to promote a sound and prosperous rural life as indispensable to the maintenance of maximum employment and national prosperity . . . also . . . to assure agriculture a position in research equal to that of industry which will aid in maintaining an equitable balance between agriculture and other sections of our economy." To these ends, ". . . the Secretary of Agriculture is authorized . . . to conduct . . . research into the laws and principles underlying the basic problems of agriculture in its broadest aspects."

Work authorized for the Forecasting Project relates to improvement of production on farms, under the subtitle "Reducing Hazards on Farms." Obviously, one of the main factors in lessening the risk of crop production is efficient disease prevention or control, but the actual employment of control measures is only one part of this task. It involves, as well, watching the occurrence of diseases so that prompt action can be taken to forestall the development of threatening situations. This is the field of the Crop Plant Disease Forecasting Project.

The work of the Project is defined by its title: "Establishment of facilities for forecasting the development of crop plant diseases"; and by the statement of its objectives, as follows: "To obtain by intensive field work, in cooperation with the State Agricultural Experiment Stations and others interested, accurate data on the occurrence and distribution of economic crop diseases and to search for new and threatening diseases or dangerous outbreaks of established diseases; to study the factor involved in epidemic outbreaks, the damage caused by plant diseases and means of appraising it, the transmission of important plant pathogens from one area into another with special reference to greater probability of spread by man or by insect vectors resulting from increased high-speed long distance transportation facilities; and to establish a warning service so as to permit setting up effective control or prevention programs in the various States to combat or prevent epidemics."

(To be concluded in the next issue)

ADVICE TO ALL: Don't Skimp On Fertilizer In '50

According to the experts, it may pay farmers to use more fertilizer in 1950 even though prices of many things they have to sell are going down and fertilizer will cost about the same as this past year.

Each year for the past several years, farmers have used about 10 per cent more fertilizer than the year before. Some farmers may be thinking of leaving fertilizer out of their 1950 crop plans in an effort to cut farm production costs.

Most farm advisers today will say that leaving fertilizer out of cropping practices may cut profits more than costs. Many farmers over the United States can use more fertilizer profitably, especially in the Midwest on feed crops, pastures and other crops that haven't had much fertilizer the past few years.

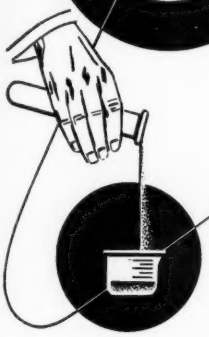
How much fertilizer farmers can use to advantage differs from farm to farm. Farmers should carefully calculate costs and returns from the use of fertilizer. Consider the cost of fertilizer, how much it costs to apply, and then the cost of harvesting the extra yield it will produce. Then consider the additional returns from the crop on which you apply fertilizer. Also always figure the extra returns fertilizers, especially phosphate, will give in later years.

Farmers should talk over the problem with county extension directors and have soil tests made. Inefficient use of fertilizer this year may shrink farm profits.

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New England Conference

(*Continued from page 6*)

quet. Problems of soil management affecting response to fertilizer were discussed at the closing session of a two-day Conference.

Dr. C. L. W. Swanson, head of the Connecticut Station Soils Department, spoke on soil structure and crop production. His experiments revealed that fertilizers were much more beneficial when organic matter was added at the same time. Another test showed that when corn growing on a dry loam was cultivated for weed control, a larger crop was produced than when chemicals were used to kill weeds. Dr. Swanson believes the beneficial effect of cultivation in this case was variation of the soil and not an indictment of weed killers.

Dr. H. A. Lunt, also of the Connecticut Station Soils Department, described the revolution in soil testing methods during the past 40 years. The "quick" test, developed by the late Dr. M. F. Morgan, former head of the Soils Department, is in constantly increasing use to guide farmers in application of the right fertilizer in economic amounts. More than 70,000 samples of soil were tested by this method in New England last year, Dr. Lunt said.

Two problems of the tobacco industry were discussed by Prof. C. V. Kightlinger, agronomist, Massachusetts Agricultural Experiment Station. Experiments have shown that spring application of fertilizer to seedbeds has caused poor stands and unsuitable plants. Fall fertilization avoids these difficulties and is recommended by him. The other serious problem of production is caused by poor culture resulting from some rotations. Dr. Kightlinger prescribed addition of organic matter and use of cover crops to remedy this situation.

The history of fertilizer inspection in Connecticut was outlined by Dr. H. J. Fisher, head of the Analytical Chemistry Department of the Connecticut Station. He called attention to the appointment of a chemist, Samuel W. Johnson, by the State Agricultural Society in 1857 to examine fertilizers for farmers. This type of inspection was continued until the first inspection law was passed in 1869. The law was amended in 1882 and in 1919, and a complete revision passed in 1949. Dr. Fisher emphasized the fact that a large majority of the grades examined in 1949 met or exceeded their guaranties.

Prof. J. S. Owens, agronomist of the University of Connecticut, gave an illustrated lecture on the agriculture of Japan. He emphasized that we have much to learn from Japanese soil management which has kept soil fertility at a high level for centuries. He also commented on the contributions American agriculture could make to Japan to enable it to become self-sufficient.

All of the group expressed their satisfaction at the results of the meeting, and many commented that it was among the best they had ever attended. AMERICAN FERTILIZER takes this opportunity on behalf of the commercial fertilizer group to thank the friendly persons of the Connecticut Agricultural Experiment Station, and the National Fertilizer Association, for making such a fine twin-event meeting possible in this centennial year of our industry.

MONSANTO PURCHASES PHOSPHATE LAND OPTION

Monsanto Chemical Company, St Louis Mo., has obtained an option to purchase part of the phophate deposits of the Humphreys Phosphate Company near Vernal, Utah. Adjoining ranch property has also been covered by option, and the phosphate division of Monsanto Chemical Company plans to prospect the deposits in exploratory work which may extend for several years, according to John L. Christian, general manager of the division.

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Scar-Lipman & Co., New York City

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Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
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Titlestad Corporation, Nicolay, New York City

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Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill
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McIver & Son, Alex M., Charleston, S. C.
Scar-Lipman & Co., New York City

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United States Potash Co., New York City

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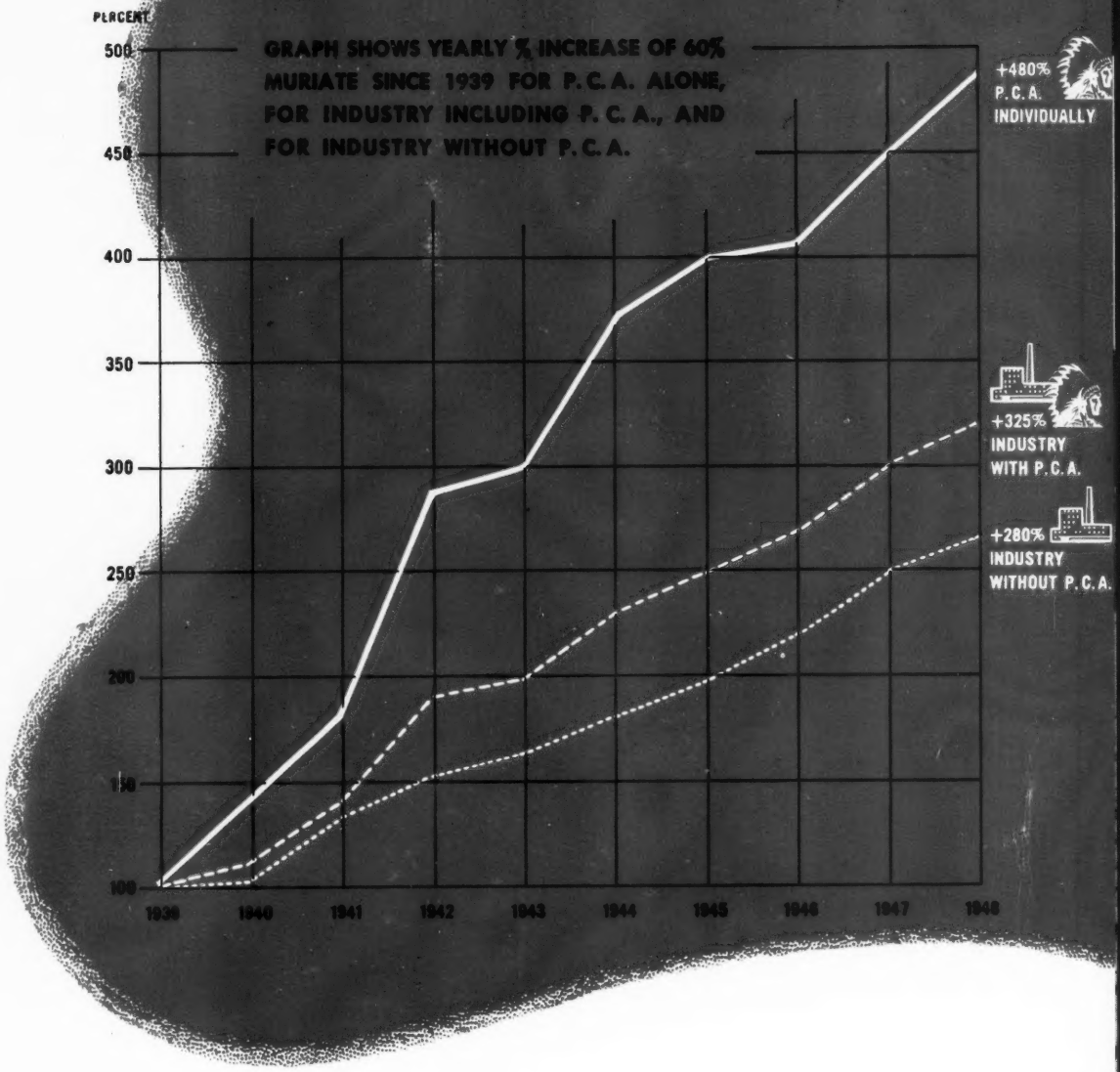
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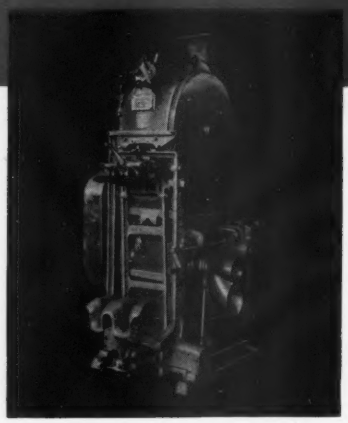
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